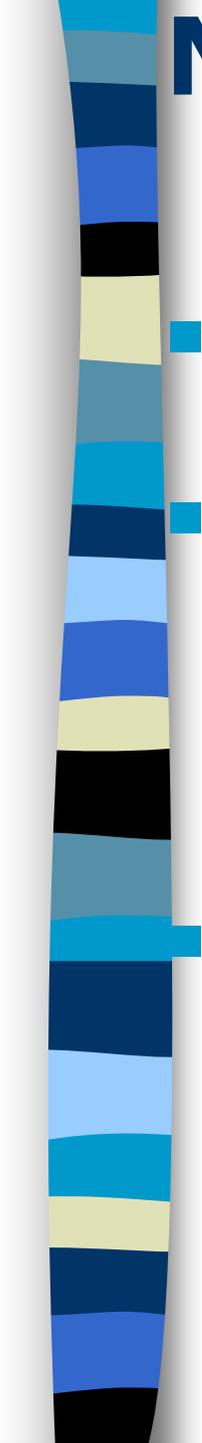


**Moist physics aspects:  
ALARO-1 and more general  
perspectives**

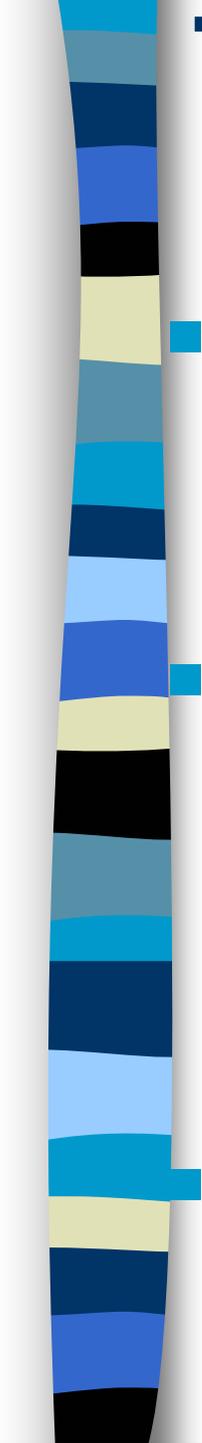
*J.-F. Geleyn*

*AIWD, Vienna, Austria, 13/05/2014*



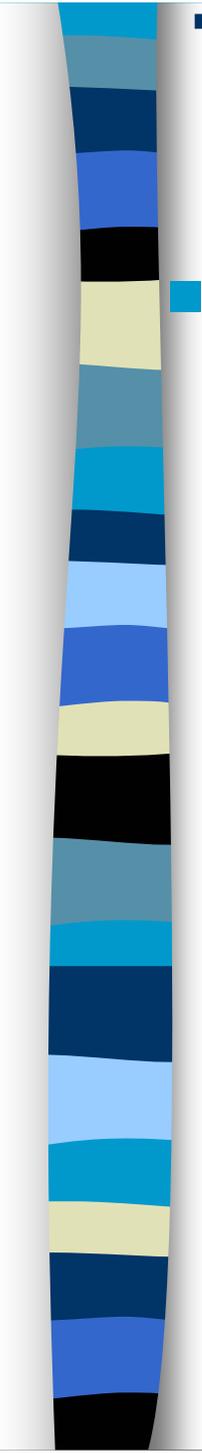
# Not too much to say for the first ALARO-1 version

- Radiation is not really part of the ‘moist physics’ (even if it needs cloud radiative properties).
- Downdrafts are not associated with any cloud. Furthermore, in the ALARO logic they are a rather independent part of the physical time-step (switch from saturated to unsaturated should be ‘transparent’ to the rest).
- So, only SCC is at stake. Here the idea to follow the lead of Tompkins (2002) was abandoned since the last A1WD meeting. The combination of LL04 and MG13 appears more promising. No bad surprise expected there, though one never knows!



# Transversal perspective for the cloud-handling (1/2)

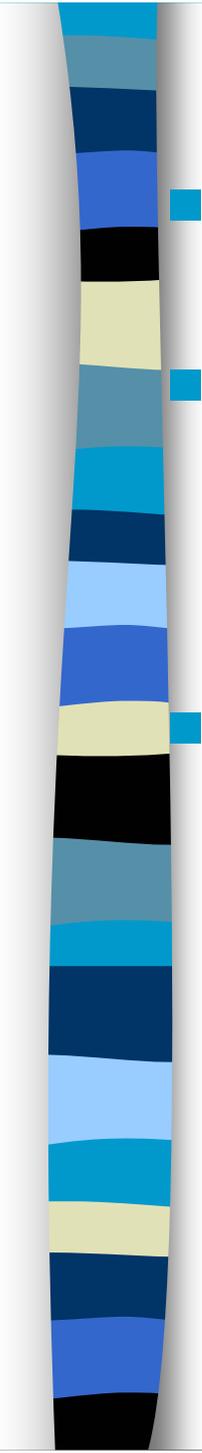
- Since we leave the 'local' side for the 'global' one, we cannot anymore speak of unification, but rather of internal harmonisation for ALARO-1, at least in a first step.
- Let us assume that we shall soon have an appropriate SCC (on half levels, beware). We would have displaced the 'shallow convection staggering problem' from turbulence to radiative forcing, and this would already be a huge progress!
- In the latter case, we may expect that reinterpolation will not be too detrimental, but this must be tested carefully.



# Transversal perspective for the cloud-handling (2/2)

- Given the fact that ARPEGE radiative-cloud strategy (relying on the prognostic  $q_{l/i}$  quantities) seems to work well in 3MT-in-ARPEGE, we would then be close to a full harmonisation, with the following steps yet to be accomplished:
  - Harmonising the  $q_{l/i}$  and cloud-cover input to radiation (via a first call to the thermodynamic adjustment);
  - Extending the ‘protection of condensates’ (in either both or at least in a second call to the thermodynamic adjustment) from ‘deep’ convective only to ‘deep + shallow’;
  - Verifying (and ensuring further if necessary) the consistency with the ‘reintroduced’ diffusive  $q_{l/i}$  transport in TOUCANS.
  - Preparing ourselves for a heavy tuning exercise!!!

# 'Déjà vu' ?

- 
- Both previous slides are fully identical to those presented on the same theme in Ljubljana!!
  - Indeed we made practically zero progress on such issues in the past two years (owing to the scientific rehearsals in NER, TOUCANS, LENTCH, Closure of 3MT, etc.).
  - This time it would be wise:
    - To be more cautious in the planning;
    - To try and establish a mechanism for a better sharing of the workload;
    - To work in parallel with other issues, past the creation of the initial baseline for the ALARO-1 first stage;
    - To see this issue as something touching topics beyond ALARO-1, now that interactions between various physics packages is getting closer to concretisation.

# Rather than a conclusion!

